

BAB VII

PERHITUNGAN SLOOF S1

7.1 Perencanaan Sloof

- Beban momen lentur

$$L_s := 3.0 - 0.30 = 2.7 \quad \text{m}$$

$$\text{Dimensi sloof:} \quad b := 150 \quad \text{mm}$$

$$h := 250 \quad \text{mm}$$

$$\text{Beban mati tembok} \quad W_t := 250 \cdot 3.6 = 900 \quad \text{kg/m'}$$

$$\text{Berat sendiri sloof} \quad W_s := 0.15 \cdot 0.25 \cdot 2400 = 90 \quad \text{kg/m'}$$

$$q_{\text{tot}} := W_t + W_s = 990 \quad \text{kg/m'}$$

$$q_u := 1.2 \cdot q_{\text{tot}} = 1188 \quad \text{kg/m'}$$

Momen berfaktor M_u :

$$M_u := \frac{q_u \cdot L_s^2}{10 \cdot 100} = 8.661 \quad \text{kNm}$$

- Beban aksial (10% Pkolom)

$$P_{\text{kolom}} := 148.908 \quad \text{kN}$$

$$P_s := 0.1 \cdot P_{\text{kolom}} = 14.891 \quad \text{kN}$$

Direncanakan menggunakan:

tulangan utama $2\phi 12$ (two face)

sengkang $\phi 8$

$$\text{daksen} := 40 + 8 + 6 = 54 \quad \text{mm}$$

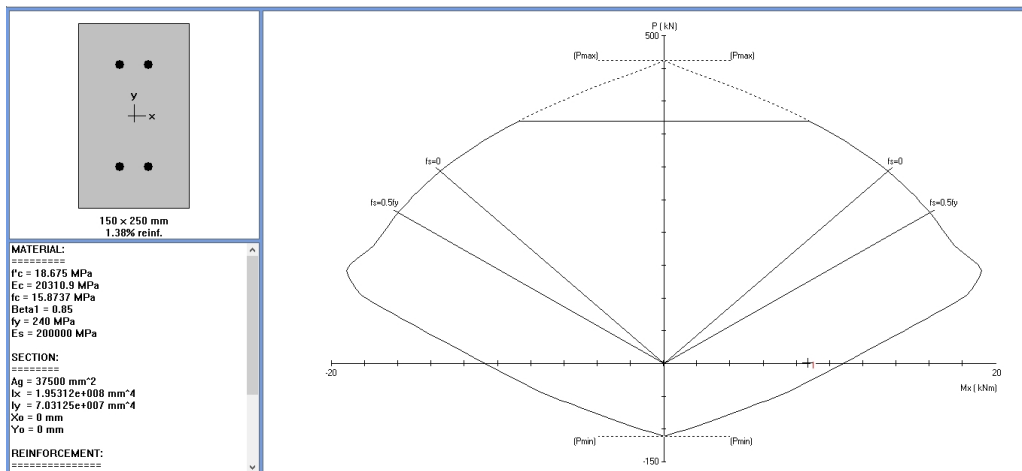
$$d := h - \text{daksen} = 196 \quad \text{mm}$$

$$f_y := 240 \quad \text{Mpa}$$

$$f_c := 18.675 \quad \text{Mpa}$$

$$E_s := 200000 \quad \text{Mpa}$$

Kontrol menggunakan PCACOL



- Tulangan Geser Sbof

$N_u := 14.891 \text{ kN}$ (Output ETABS)

kuat geser komponen struktur yang dibebani aksial tekan

$$A_g := b \cdot h = 37500 \text{ mm}^2$$

$$V_c := \left(1 + \frac{N_u \cdot 1000}{A_g} \right) \cdot \frac{\sqrt{f_c} \cdot b \cdot d}{6 \cdot 1000} = 29.584 \text{ kN} \quad (\text{SNI 03-2847-200 Ps. 13.3.1.2})$$

$$V_u := \frac{q_u \cdot L_s}{2 \cdot 100} = 16.04 \text{ kN}$$

$$V_s := \frac{V_u}{0.6} - V_c = -2.85 \text{ kN}$$

karena gaya geser beton mampu menahan gaya geser yang bekerja maka cukup dipasang tulangan geser $\Phi 8$ -150 pada daerah tumpuan & $\Phi 8$ -200 pada daerah lapangan.